gradations in dependence upon the mycorhizal habit. Some will make only a very slight mycelial growth in cultures, while others will form abundant mycelia, but never develop carpophores. Field experiments also confirm this mycorhizal dependence, but attempts to trace mycelium from carpophore to tree were seldom successful. He considers the mycorhizal relationship to be symbiotic, the green plant furnishing carbohydrates and in return receiving water and salts, especially nitrogenous substances which the fungi probably obtain by the fixation of free nitrogen.

As a source of cultures he first tried the germination of spores. Various media and methods of treating spores were tried, but no germinations from mycorhizal forms such as tubers or amanitas were obtained, and from other forms the mycelium obtained was seldom vigorous. Because of this he resorted to the use of portions of the carpophore, flamed over a Bunsen burner, as a source of cultures, and found this (which he erroneously considers a new process) much more satisfactory. In this manner he obtained cultures of 24 species which he describes, giving figures for 17 of them. While many media were used, he found a decoction from carrots, solidified with gelose (a gum derived from agar-agar), the most satisfactory. Cultural variations bring into question the validity of some specific characters, such as size, color, and characters due to substratum.

In his studies of *Morchella* cultures were obtained from single spores. The mycelium was very vigorous, growing well at 10–12° C. Sclerotia 0.5–4 mm. in diameter appear in 10–15 days. No conidia or ascocarps were formed. He attributes the absence of ascocarps either to the limited mycelial growth in cultures, or, as he considers more probable, to the necessity of a mycorhizal host prior to ascocarp formation.

Cultures obtained from the spores of *Psaliota* were always weak, while those from portions of the carpophore were very vigorous. From his pure cultures he easily developed successful commercial spawn. Cultures from one carpophore always developed carpophores with the same varietal characters as the original, which is a great practical advantage.—LEVA B. WALKER.

Identification of mahoganies.—To meet the need of some adequate method for distinguishing the different commercial timbers now classed as mahoganies, DIXON[20] has prepared (1) a concise working definition of the term mahogany, and (2) an anatomical key accompanied by detailed descriptions for the identification of some of the more common kinds by means of their microscopic characters. The constant increase in the number of species of mahogany-yielding trees in economic use, and the doubtful authenticity of many of the specimens derived from commercial sources, have made the construction of such a scheme of classification most difficult.

[20] DIXON, H. H., Mahogany, the recognition of some of the different kinds by their microscopic characteristics. Notes from the Bot. School, Trinity College, Dublin 3:58. *pls. 22–54*. 1919.

The first part of this preliminary paper discusses the many varied properties of these different woods, with regard to color, density, hardness, presence or absence of year-rings, pore-rings, size and contents of vessels, distribution of parenchyma, etc., and also the numerous contradictory definitions of mahogany to which these structural differences have given rise. To the general public and to the majority of woodworkers, mahogany is a reddish wood, generally with some distinct figure and texture, and valued in proportion to the beauty of its figure and the resistance of the wood to splitting and warping. Obviously such a definition is not sufficient. Reddish color and figure, both emphasized as distinct diagnostics of the original mahogany, *Swietenia mahogoni*, of course are essential, as also is the character described as "roeyness." According to DIXON, we may recognize as mahogany "all red or red-brown timbers in which the fibers of the adjacent layers cross each other obliquely, and so give rise to a play of light and shade on longitudinal surfaces ('roe'), greatly emphasizing the figure and conferring on the wood a freedom from splitting and warping." In addition, a mahogany should have scattered vessels, isolated or in small radial groups; the circumvasal parenchyma should be thin, and the medullary rays not more than 9 cells in width and under 2 mm. in height. In other respects the different woods designated by this name exhibit great structural variability.

The second part of the article presents the key and well written anatomical diagnoses of Western, African, Asiatic, and Australasian mahoganies. The 23 plates are from photomicrographs of transverse, radial, and tangential sections of the various woods, and are intended to show their distinct microscopic features.—LADEMA M. LANGDON.

Comparative salt absorption.—STILES and KIDD[21] have published two papers on the mechanism of salt absorption by disks of carrots and of potato tubers. Their method of study was to immerse a quantity of uniform disks of the material in salt solutions, and follow the course of absorption by the changes in the electrical conductivity. Although the conductivity is affected, not only by absorption of salt, but also by exosmosis, the writers believe that the latter is small, especially in the case of carrot. Potassium, sodium, and calcium chlorides are readily absorbed in all concentrations from N/10 to N/5000. The initial rate of absorption is roughly proportional to the concentration, but after a time this does not hold. The ratio of final internal concentration (arrived at by calculation) to final external concentration they call the absorption ratio. With low external concentrations this ratio is many

[21] STILES, W., and KIDD, F., The influence of external concentration on the position of the equilibrium attained in the intake of salts by plant cells. Proc. Roy. Soc. B **90**:448–470. 1919.

———, The comparative rate of absorption of various salts by plant tissue. Proc. Roy. Soc. B **90**:487–504. 1919.